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A fundamental shortcoming of the book lies in the very formulation of the problem: Gemelli does not analyze the formal character of the method. This is due to the fact that he is not acquainted with the recent investigations on the value of subjective equality and on the method of just perceptible differences. This is peculiar, since he quotes some of my papers as well as Wirth's book, in which a long chapter is devoted to the exposition of these ideas. The first important point in an analysis of this method is to lay down a definition of the subjective equivalent in terms of the probabilities of the different judgments. The next point is the analysis of what Gemelli calls the procedure of minimal variations in the method of equivalents. This does not offer any great difficulties, since the formulæ for the method of just perceptible differences could be easily adapted so as to fit this case.

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Das Wissen der Gegenwart in Mathematik und Naturwissenschaft. Wissenschaft und Hypothese, XVI. E. PICARD. Leipzig: B. G. Teubner. 1913. Pp. 292.

"Das Wissen der Gegenwart" gives a concise and valuable history of the development of mathematics and natural science in recent years, and is concerned not only with mathematics and natural science, but also with the relation between the two. Each science has its "pre-mathematical period." For example, biology has not yet reached a point where its laws may be expressed in mathematical form, while physics is farther advanced toward such a point. And yet, as Fresnel said to Laplace, "Nature does not bother herself about analytic difficulties," so it often happens that a natural law may be expressed in mathematical form only with the greatest difficulty, and, once formulated, may need to be revised and extended.

The scientist does not object to this, but rather rejoices in it, since he regards science as growing and would have no interest in it otherwise. He aims to find a "theory" which will first order and explain known phenomena, and will then prove "fruitful" in bringing about the discovery of new phenomena. If these, in their turn, require a revision of his theory, so much the better. According to Picard's view, scientists differ essentially from two other classes of men—from certain philosophers, who aim at a fixed set of laws to explain all phenomena that are to come and who are apt to be dogmatic, fitting facts to theories; and from those who have interest only in things commercial, not realizing that "the scientific dreamers who seem buried in their theories are really men of affairs." Experiment suggests theory and theory experiment, and each is dependent on the other. But the value of a theoretical investigation is not always recognized at once; for example, "the researches of Gibbs remained for fifteen years almost wholly unknown, until one day van der Waals acquainted the Dutch chemists with their importance;" and the careful study of conic sections by the Greek geometers remained "useless" for two thousand years.

The present tendency to break down the walls between sciences presents the problem of extending the laws of physics so as to apply to phenomena in chemistry and biology. The field thus opened demands of the scholar knowledge so extensive that in future the most important results will be reached through the combined efforts of scientists in different fields, say, a physicist or chemist working with a mathematician.

Mathematical concepts (function, infinity, the continuum, etc.) are clearly brought out in their historical setting. Classing mathematicians as physicists or logicians, Picard is a physicist. "True rigor," he says, "is fruitful, and differs from that other rigor—tiresome and purely formal—which only obscures the problems that it touches."

The author announces that his book will have nothing to do with philosophy "in the ordinary sense." A scientist in his laboratory is not concerned with doubts as to the existence of phenomena whose laws he is investigating; Galileo was the father of modern science because he asked not *why* but *how* bodies fall. But a student of philosophy in the broad sense will find the book full of interest. The author suggests, for example, that we owe the idea of cardinal number (number pertaining to a group) to our sense of sight, and the idea of ordinal number to our sense of hearing. And throughout the treatment of non-Euclidean geometries and the "new physics" it is evident that the author has a keen philosophical interest. In fact, his general attitude toward science is itself a philosophy. The notes by F. Lindemann are rich in references for further study.

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The Mental Capacity of the American Negro. MARION J. MAYO. New York: The Science Press. Pp. 70.

Marion J. Mayo has made a study of the class standing of 150 colored students in the high schools of New York during a space of about three years. From this study the author concludes, "that as regards the mental heredity of the Negro and white races as represented in our Northern States, the average mental ability of the white race, so far as this ability is exercised in school studies, is higher, but not a great deal higher, than that of the colored race; and that as regards the mental variability, the white race is more variable, but not a great deal more variable, than is the Negro race."

To base conclusions as to ten and one quarter millions people on a study of 150 would seem to be a little rash. It is, however, especially questionable when the measurements relied on are the class marks given in a public school system. Further than this, Miss Mayo had no means of knowing how "colored" these students were; that is whether they were seven-eighths white or seven-eighths black, whether they represent Bantu or Hottentot Negroes, Songhay or Pygmies. To assume then that these 150 pupils represent a "race" was going far beyond the evidence.

The author says, that, "if we admit that white pupils on the whole surpass colored pupils in school ability, we may well ask whether this is